REMARKS

Explanation of Amendments

The specification has been amended to add section headings, to correct the spelling of "liquefied" in the title and claims, and to amend the abstract to remove any legal phraseology. Claims 1, 3, 6, 9, and 10 have been amended to remove reference numerals. No claim has been added or deleted. No new matter has been entered by these changes. Upon entry of these amendments, claims 1-14 will remain in the application.

Amendments to Specification

The specification has been amended to add section headings as requested by the examiner.

Objections to Abstract

The abstract has been objected to for use of legal phraseology. Applicant has amended the abstract to remove the legal phraseology as requested by the examiner. Withdrawal of the objection to the abstract is solicited.

Objections to Claims

Claims 1-14 are objected to for inclusion of reference numerals. Claims 1, 3, 6, 9, and 10 have been amended to remove the objectionable reference numerals. Withdrawal of the objections to claims 1-14 is solicited.

Claim Rejections – 35 U.S.C. 102(b)

Claims 1, 4-6, and 8-14 stand rejected under 35 U.S.C. 102(b) as allegedly being anticipated by WO 98/06972 ("Seton"). This rejection is respectfully traversed.

The cryostat of claim 1 is clearly distinguished from Seton by the fact that the radiation shield comprises "a plurality of rods which are thermally conducting and electrically insulating when the cryostat contains liquefied gas." The Examiner asserts that this feature is disclosed in Seton at page 6, lines 25-29, which refers to a radiation shield formed from "electrically insulated strips or wires of aluminium or copper." However, Applicant notes that this term refers to copper or aluminium strips or wires that are electrically insulated from one another. The strips or wires are formed from an electrically conducting material but are insulated from one another to reduce eddy currents. The term "electrically insulated" as used by Seton in no way implies

that either the strips or wires are themselves electrically insulating in addition to electrically conducting "when the cryostat contains liquefied gas" as claimed. Rather, the opposite is true, since the concept of electrically insulating a strip or wire which is not electrically conducting does not make sense.

In any case, while Seton discloses electrically conducting strips or wires that are electrically insulated, Seton does not teach a radiation shield comprising "a plurality of rods which are thermally conducting *and* electrically insulating when the cryostat contains liquefied gas" as claimed (emphasis added). As such, Seton does not anticipate the claimed cryostat. Withdrawal of the rejection of claims 1, 4-6, and 8-14 as being anticipated by Seton is appropriate and is respectfully solicited.

Claim Rejections – 35 U.S.C. 103(a)

Claims 1-14 stand rejected under 35 U.S.C. 103(a) as allegedly being unpatentable as obvious over Seton alone or alternatively over Seton in view of U.S. 2002/0024338 ("Saho") or U.S. 5,065,582 ("Seifert"). These rejections are traversed.

Seton alone

As noted above, the claimed cryostat is distinguished from Seton by the fact that the radiation shield comprises a plurality of rods which are thermally conducting and electrically insulating when the cryostat contains liquefied gas. By contrast, Seton discloses a thermally conductive, electrically insulated radiation shield 6, which is in the form of a continuous cylinder. As discussed in the present specification, the production of a continuous cylinder from materials which are both thermally conductive and electrically insulating is both difficult and expensive, due to the inherent cost of such materials, and the difficulty of forming continuous sheets. The present inventors have identified that both material and manufacturing costs can be reduced by replacing the continuous cylinder radiation shield proposed in Seton with one which comprises a plurality of rods.

However, the use of rods does not result in any perceivable reduction in eddy current losses, as compared to the continuous cylinder radiation shield disclosed by Seton. Nevertheless, the Examiner asserts that it would have been obvious to replace the continuous cylinder of Seton

with a plurality of rods in view of the reference to "electrically insulated strips or wires of aluminium or copper...set lengthways into a g.r.p. tube" at page 6, lines 25-30, of Seton.

As explained in Seton, the construction taught by Seton minimizes the area of any electrically conducting paths and thereby reduces eddy current losses. However, Seton solves the problem of eddy current losses by forming the radiation shield from a material which has negligible electrical conductivity. This virtually eliminates eddy current losses from the radiation shield, to the extent that replacing the continuous cylinder with strips or wires would produce no perceptible improvement. Applicant thus submits that it would not have been obvious to one of ordinary skill in the art to form the radiation shield from strips or wires for the purpose of further decreasing eddy current losses.

Moreover, the manufacturing issues addressed by the present invention are specifically associated with materials such as sintered ceramics which are both thermally conductive and electrically insulating. With regard to metals, forming a cylinder from insulated copper or aluminium strips or wires would be no easier or cheaper than forming a continuous cylinder of the same material. Accordingly, Applicant submits that it would not have been obvious to one skilled in the art in view of Seton that forming the radiation shield from thermally conductive, electrically insulating rods would have any advantage.

For at least these reasons, withdrawal of the obviousness rejections of claims 1-14 over Seton alone is appropriate and is solicited.

Seton + Saho or Seifert

Saho discloses a radiation shield that comprises a plurality of thin strips of a metal material in order to reduce eddy currents (paragraph 29). Similarly, Seifert discloses a radiation shield formed from a metal such as copper applied to an electrically insulating carrier (column 4, lines 56-59), the metal part having the form of individual electrically conductive tracks that are electrically insulted from each other, to reduce eddy currents (column 5, lines 21-31).

Applicant submits that, as with Seton, neither Saho nor Seifert suggests any advantage associated with the disclosed construction, aside from the reduction of eddy currents. Accordingly, for the reasons outlined above with respect to Seton, Applicant further submits that it would not have been obvious for one of ordinary skill in the art to form the radiation shield

disclosed in Seton with strips or tracks as disclosed in Saho or Seifert where the resulting radiation shield comprises "a plurality of rods which are thermally conducting and electrically insulating when the cryostat contains liquefied gas" as claimed.

For at least these reasons, withdrawal of the obviousness rejections of claims 1-14 over Seton in view of Saho or Seifert is appropriate and is solicited.

Conclusion

For at least the reasons cited herein, claims 1-14 are believed to be allowable over the cited prior art and the application is believed to be ready for issuance. A Notice of Allowability is solicited.

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